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Docket No.: 500.43007X00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re the Application of:

Yusuke FUKUDA et al.

Serial No. 10/634,769

Filed: August 6, 2003

For: PERFORMANCE INFORMATION MONITORING SYTEM,
METHOD AND PROGRAM

SUPPLEMENTAL PETITION TO MAKE SPECIAL
UNDER 37 CFR \$1.102(MPEP \$708.02)

June 13, 2005

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Supplemental to the Petition to Make Special filed May 16, 2005,

Applicants submit the following additional remarks.

It is submitted that the cited references, whether considered alone or in combination, fail to disclose or suggest the invention as claimed. More particularly, the cited references, at a minimum, fail to disclose or suggest in combination with the other limitations as recited in the claims:

a first feature of the present invention as recited in independent claim 1 including comparing performance information of the second computer previously stored in a storage with the performance information received from the second computer in the first computer, judging whether or not said second computer is included in the information of said group when finding a difference between the

performance information in the comparison result, and transmitting an instruction to the computer included in said group information to change a performance information collection interval according to said judgment result;

a second feature of the present invention as recited in independent claim 3 including displaying a host name of a second computer and a volume name of a volume managed by said second computer on said first computer on the basis of information acquired from said second computer, receiving information about a use state of the volume managed by said second computer from said second computer, and displaying as highlighted the volume name of the volume when the information of the use state of the volume corresponding to said displayed volume name satisfies predetermined conditions;

a third feature of the present invention as recited in independent claim 5 wherein a process for displaying a host name of a second computer a volume name of a volume managed by said second computer on the basis of information acquired from the second computer, a process for judging whether or not the information of the use state of the volume corresponding to said displayed volume name satisfies predetermined conditions, and a process for changing a display of the volume name corresponding to the volume according to said judgment result;

a fourth feature of the present invention as recited in independent claim 7 wherein detects an occurrence of an input or output to or from a disk and transmits an instruction to change a data collection interval according to a detection result of said input/output occurrence; and

a fifth feature of the present invention as recited in independent claim 10 including means for displaying a host name of a second computer and a volume name of a volume managed by said second computer on the basis of information acquired from the second computer, and means for highlightedly displaying the volume name corresponding to the volume when the information of the use state of the volume corresponding to said displayed volume name satisfies predetermined conditions.

To the extent applicable to the present Petition, Applicants submit that although the distinguishing feature(s) may represent a substantial portion of the claimed invention, the claimed invention including said feature(s) and their inter-operation provides a novel storage system and system and method related to or implemented in or by said storage system not taught or suggested by any of the references of record.

The references considered most closely related to the claimed invention are briefly discussed below:

U.S. Patent No. 5,210,829 (Bitner) discloses a tape drive with a buffer which is used to temporarily store information transferred between a host computer and the tape drive, in which the buffer may have an adjustable watermark. The streaming tape includes a tape drive controller with an electronic buffer. The buffer temporarily stores data that is being transferred between a host computer and a tape. During a write transaction, in which the host computer sends data to the tape for storage, the buffer receives that data sent over the system bus by the host computer, and it temporarily stores the data until the tape

mechanism has ramped up to its write velocity. The buffer has an adjustable watermark which determines the level of data that must be present in the buffer before the mechanical assembly of the tape drive will begin to ramp the tape up to its write velocity. When the write velocity is achieved, the data in the buffer is transferred onto the tape, and the buffer is emptied so that it may receive additional data. (See, e.g., Abstract and column 4, line 41, through column 5, line 51.) However, unlike the present invention, Bitner does not disclose, at a minimum, a screen displaying method using a first computer, comprising the steps of: displaying a host name of a second computer and a volume name of a volume managed by said second computer on said first computer on the basis of information acquired from said second computer; receiving information about a use state of the volume managed by said second computer from said second computer; and displaying as highlighted the volume name of the volume when the information of the use state of the volume corresponding to said displayed volume name satisfies predetermined conditions. More particularly, Bitner does not disclose or suggest the above described first feature of the present invention as recited in independent claim 1, the above described second feature of the present invention as recited in independent claim 3, the above described third feature as described in independent claim 5, the above described fourth feature as described in independent claim 7, and the above described fifth feature of the present invention as recited in independent claim 10, in combination with the other limitations recited in each of the independent claims.

U.S. Patent No. 5,390,299 (Rege et al.) discloses a communication interface adapter employing buffer memory in the transfer of data packets between a data network and a host computer. The system includes a network adapter including a packet buffer memory coupled to the network to store data packets received from the network, means for transferring the data packets from the packet buffer memory to the host computer and means for notifying the host computer when the occupancy of the packet buffer memory exceeds a threshold value. The means for notifying includes a means for setting an average threshold exceeded bit in a data word associated with one of said data packets to be delivered to the host computer, the average threshold being a predetermined average fullness level of the packet buffer memory, and a means for setting an instantaneous threshold exceeded bit in a data word associated with one of the data packets to be delivered to the host computer, the instantaneous threshold being a predetermined instantaneous fullness level of the packet buffer memory. When the buffer memory has insufficient free space to store an incoming packet, the packet is discarded. The network adapter keeps a count of the number of discarded packets. (See, e.g., Abstract and column 1, line 62, through column 2, line 28.) However, unlike the present invention, Rege et al. does not disclose, at a minimum, a screen displaying method using a first computer, comprising the steps of: displaying a host name of a second computer and a volume name of a volume managed by said second computer on said first computer on the basis of information acquired from said second computer; receiving information about a use state of the volume managed by said second computer from said second

computer; and displaying as highlighted the volume name of the volume when the information of the use state of the volume corresponding to said displayed volume name satisfies predetermined conditions. More particularly, Rege et al. does not disclose or suggest the above described first feature of the present invention as recited in independent claim 1, the above described second feature of the present invention as recited in independent claim 3, the above described third feature as described in independent claim 5, the above described fourth feature as described in independent claim 7, and the above described fifth feature of the present invention as recited in independent claim 10, in combination with the other limitations recited in each of the independent claims.

U.S. Patent No. 5,740,468 (Hirose) discloses data transferring buffer circuits for data exchange enabling data transfer between a great number of processors using data transferring buffer circuits for data exchange suitable for data transfer between processors by a relatively small number of buffers with relatively simple control processors. The buffer circuits includes: a plurality of buffers corresponding to the plurality of data sources, independently receiving and storing data sent from the plurality of data sources; a buffer limit signal generating circuit for delivering a buffer limit signal when the amount of data stored in the buffer reaches a predetermined limit; a data read signal generating circuit for selecting one of the buffers and generating a data reading signal for the selected buffer based on the remaining data amount and information concerning the vacancy of the buffer to which data is to be supplied; and a selected data delivery circuit for adopting data selected by the data read signal generating

circuit and delivering the adopted data. (See, e.g., Abstract and column 1, line 43 through column 2, line 25, and column 7, lines 22-33.) However, unlike the present invention, Hirose does not disclose, at a minimum, a screen displaying method using a first computer, comprising the steps of: displaying a host name of a second computer and a volume name of a volume managed by said second computer on said first computer on the basis of information acquired from said second computer; receiving information about a use state of the volume managed by said second computer from said second computer; and displaying as highlighted the volume name of the volume when the information of the use state of the volume corresponding to said displayed volume name satisfies predetermined conditions. More particularly, Hirose does not disclose or suggest the above described first feature of the present invention as recited in independent claim 1, the above described second feature of the present invention as recited in independent claim 3, the above described third feature as described in independent claim 5, the above described fourth feature as described in independent claim 7, and the above described fifth feature of the present invention as recited in independent claim 10, in combination with the other limitations recited in each of the independent claims.

U.S. Patent No. 6,212,582 (Chong et al.) discloses a method for controlling data packet traffic flow over a bus interconnecting two or more nodes in a data communication system, each node having a unique address with it and having a respective buffer memory for temporarily holding incoming data communicated, each node further being capable of multicast sending of data

packets over the bus to one or more nodes having respective addresses logically associated with a unique address. The method comprises checking current available buffer memory occupancy upon receipt of a data packet, the node being capable of outputting for transmission on the bus a first flow control indicator message when the data temporarily stored in the buffer memory is above a first buffer occupancy threshold associated with data of a first priority type, and a second flow control indicator message when the data temporarily stored in the buffer memory is above a second buffer occupancy threshold, the second buffer occupancy threshold being greater than the first occupancy threshold. The system implements a logical flow control to prevent the transmission of data packet traffic of the first priority from one or more sending nodes to two or more received nodes logically associated with the outputting node at the priority in response to receipt of the first flow control indicator message, and implements physical logical flow control to prevent transmission of data packets at any traffic priority in response to the second flow control indicator message. (See, e.g., Abstract and column 2, line 65, through column 3, line 29.)

However, unlike the present invention, Chong et al. does not disclose, at a minimum, a screen displaying method using a first computer, comprising the steps of: displaying a host name of a second computer and a volume name of a volume managed by said second computer on said first computer on the basis of information acquired from said second computer; receiving information about a use state of the volume managed by said second computer from said second computer; and displaying as highlighted the volume name of the volume when

the information of the use state of the volume corresponding to said displayed volume name satisfies predetermined conditions. More particularly, Chong et al. does not disclose or suggest the above described first feature of the present invention as recited in independent claim 1, the above described second feature of the present invention as recited in independent claim 3, the above described third feature as described in independent claim 5, the above described fourth feature as described in independent claim 7, and the above described fifth feature of the present invention as recited in independent claim 10, in combination with the other limitations recited in each of the independent claims.

U.S. Patent No. 6,219,728 (Yin) discloses a method and apparatus for allocating shared memory resources and discarding incoming data as necessary. Adaptive thresholds are provided for each individual queue or port. The adaptive thresholds are adjusted in response to changes in the overall usage of the shared memory resources. As memory usage increases, each threshold value is lowered. When memory usage decreases, each threshold value is increased. The apparatus also includes a system for allocating shared memory resources among a plurality of queues. The shared memory resources are monitored to determine a number of available memory buffers in the shared memory. Threshold values are generated for each queue indicating the number of data cells to be stored in the associated queue. The threshold values are updated in response to changes in the number of available memory buffers. The apparatus also performs a comparison of the threshold value with the queue usage to determine whether to accept or discard incoming data cells destined for the

queue. The apparatus adjusts the threshold values by increasing the threshold value in response to increased available memory and decreasing the threshold value in response to decreased available memory. (See, e.g., Abstract and column 2, lines 27-54.) However, unlike the present invention, Yin does not disclose, at a minimum, a screen displaying method using a first computer, comprising the steps of: displaying a host name of a second computer and a volume name of a volume managed by said second computer on said first computer on the basis of information acquired from said second computer; receiving information about a use state of the volume managed by said second computer from said second computer; and displaying as highlighted the volume name of the volume when the information of the use state of the volume corresponding to said displayed volume name satisfies predetermined conditions. More particularly, Yin does not disclose or suggest the above described first feature of the present invention as recited in independent claim 1, the above described second feature of the present invention as recited in independent claim 3, the above described third feature as described in independent claim 5, the above described fourth feature as described in independent claim 7, and the above described fifth feature of the present invention as recited in independent claim 10, in combination with the other limitations recited in each of the independent claims.

U.S. Patent No. 6,275,896 (Kojima) discloses a data transfer apparatus for performing fast data transfer between a first storage medium such as a hard disk and a second storage medium and a method of the same, and to a data

input and output controlling apparatus and a method of the same. The data transfer apparatus transfers data between a first storage medium and a second storage medium capable of non-linear access, comprises a temporary storing means for temporarily storing at least one of data reproduced from the first storage medium and data reproduced from the second storage medium; a storage state monitoring apparatus for monitoring the state of storage of the temporary storing apparatus; and a transfer rate controlling apparatus for controlling a transfer rate of at least one of the data reproduced from the first storage medium and the data reproduced from the second storage medium based on a signal indicating the state of storage input from the storage state monitoring apparatus. The method includes storing data in a buffer memory, and a threshold value determines how much memory can be stored in the buffer memory. Based on the threshold value, it is possible to increase or decrease the transfer rate when the amount of the data which can be stored exceeds a first threshold value, decrease or increase the transfer rate when the amount of the data which can be stored exceeds a second threshold value, and keep the transfer rate unchanged when the amount of the data which can be stored is between the first threshold and the second threshold. (See, e.g., Abstract and column 7, lines 50-59.) However, unlike the present invention, Kojima does not disclose, at a minimum, a screen displaying method using a first computer, comprising the steps of: displaying a host name of a second computer and a volume name of a volume managed by said second computer on said first computer on the basis of information acquired from said second computer;

receiving information about a use state of the volume managed by said second computer from said second computer; and displaying as highlighted the volume name of the volume when the information of the use state of the volume corresponding to said displayed volume name satisfies predetermined conditions. More particularly, Kojima does not disclose or suggest the above described first feature of the present invention as recited in independent claim 1, the above described second feature of the present invention as recited in independent claim 3, the above described third feature as described in independent claim 5, the above described fourth feature as described in independent claim 7, and the above described fifth feature of the present invention as recited in independent claim 10, in combination with the other limitations recited in each of the independent claims.

U.S. Patent No. 6,715,007 (Williams et al.) discloses a communication system in which flow of data that is regulated. A data rate is established in each of the data sources and data receivers. The data is transmitted by the data source and written into a buffer at the source data rate, and then the data is read from the buffer and transmitted to the data receiver at the receiver data rate. The level of data in the buffer is monitored, and a rate control signal is dispatched to either the data source or the receiver when it is determined that the buffer data level is increasing or decreasing while at a lower or upper data level threshold. Subsequently, either the source or receiver data rate is adjusted in response to the rate control signal. (See, e.g., Abstract and column 2, lines 8-30.) However, unlike the present invention, Williams et al. does not disclose, at a minimum, a

screen displaying method using a first computer, comprising the steps of: displaying a host name of a second computer and a volume name of a volume managed by said second computer on said first computer on the basis of information acquired from said second computer; receiving information about a use state of the volume managed by said second computer from said second computer; and displaying as highlighted the volume name of the volume when the information of the use state of the volume corresponding to said displayed volume name satisfies predetermined conditions. More particularly, Williams et al. does not disclose or suggest the above described first feature of the present invention as recited in independent claim 1, the above described second feature of the present invention as recited in independent claim 3, the above described third feature as described in independent claim 5, the above described fourth feature as described in independent claim 7, and the above described fifth feature of the present invention as recited in independent claim 10, in combination with the other limitations recited in each of the independent claims.

U.S. Patent No. 6,851,000 (Lai) discloses method and apparatus of flow control management of data packets in a switch. The method has steps of determining each time data is being written to memory in order to calculate a memory used amount; determining each time data is being freed from the memory in order to calculate a memory freed amount; and calculating how much total memory is being used using the memory freed amount and the memory used amount. A comparison is made by comparing the total memory being used to a first predetermined threshold. When the first predetermined threshold is

reached, a first predetermined threshold command is issued indicating that the first predetermined threshold has been reached. (See, e.g., Abstract and column 2, line 19, through column 3, line 27.) However, unlike the present invention, Lai does not disclose, at a minimum, a screen displaying method using a first computer, comprising the steps of: displaying a host name of a second computer and a volume name of a volume managed by said second computer on said first computer on the basis of information acquired from said second computer; receiving information about a use state of the volume managed by said second computer from said second computer; and displaying as highlighted the volume name of the volume when the information of the use state of the volume corresponding to said displayed volume name satisfies predetermined conditions. More particularly, Lai does not disclose or suggest the above described first feature of the present invention as recited in independent claim 1, the above described second feature of the present invention as recited in independent claim 3, the above described third feature as described in independent claim 5, the above described fourth feature as described in independent claim 7, and the above described fifth feature of the present invention as recited in independent claim 10, in combination with the other limitations recited in each of the independent claims.

U.S. Patent Publication No. 2002/0103969 (Koizumi et al.) discloses a system and method for operating a data storage system in which the performance of the data storage system is maintained at or above a specified level during use of the data storage system. The data storage system is

provided with a performance monitor for monitoring operational status of the data storage system and for receiving input data to define the required data storage system performance. The system sets performance requirement parameters for various elements such like device busy rate, data transfer speed or other parameters that define storage performance. As the performance monitor monitors actual storage performance variables, if it detects a drop in the storage performance in a specific logical device or the entire data storage system, data is moved within the storage system so that the load is distributed appropriately to bring actual performance in line with the performance specification. (See, e.g., Abstract and paragraphs 11-13.) However, unlike the present invention, Koizumi et al. does not disclose, at a minimum, a screen displaying method using a first computer, comprising the steps of: displaying a host name of a second computer and a volume name of a volume managed by said second computer on said first computer on the basis of information acquired from said second computer; receiving information about a use state of the volume managed by said second computer from said second computer; and displaying as highlighted the volume name of the volume when the information of the use state of the volume corresponding to said displayed volume name satisfies predetermined conditions. More particularly, Koizumi et al. does not disclose or suggest the above described first feature of the present invention as recited in independent claim 1, the above described second feature of the present invention as recited in independent claim 3, the above described third feature as described in independent claim 5, the above described fourth feature as described in

independent claim 7, and the above described fifth feature of the present invention as recited in independent claim 10, in combination with the other limitations recited in each of the independent claims.

U.S. Patent Publication No. 2003/0188085 (Arakawa et al.) discloses a storage system and a control method for the storage system, in which a plurality of storage system nodes is made operable as a single storage system. The clustered storage system that is operable as a single storage system includes a process to allow the system administrator or the user to correlate data, particularly logical volume, stored and used in the clustered storage system with a node that processes the data and to manage such data. The clustered storage system in which a plurality of storage systems operates as a single storage system includes: a process that obtains the configuration of resources, as well as at least one of resource size used and resource usage load, of the storage system used in processing data that the storage system has and that is stored in the storage system; a process that presents the relations between address information which is provided by the clustered storage system and resource information of each storage system to a computer that uses the data, and a process that presents resource information based on such relations. The control method for a clustered storage system in which a plurality of storage systems operates as a single storage system includes the steps of: obtaining the configuration of resources, as well as at least one of resource size used and resource usage load, of the storage system used in processing data that the storage system has and that is stored in the storage system; presenting the

relations between address information which is provided by the clustered storage system and resource information of each storage system to a computer; presenting resource information based on such relations; and relocating the data among the storage systems without having to cease the use of the data by the computer. The clustered storage system according further comprises a process that notifies a warning when at least one of a resource size used, a resource usage load and a processing load in each of the storage systems exceeds a specified threshold value. (See, e.g., Abstract and paragraphs 15-20.) However, unlike the present invention, Arakawa et al. does not disclose, at a minimum, a screen displaying method using a first computer, comprising the steps of: displaying a host name of a second computer and a volume name of a volume managed by said second computer on said first computer on the basis of information acquired from said second computer; receiving information about a use state of the volume managed by said second computer from said second computer; and displaying as highlighted the volume name of the volume when the information of the use state of the volume corresponding to said displayed volume name satisfies predetermined conditions. More particularly, Arakawa et al. does not disclose or suggest the above described first feature of the present invention as recited in independent claim 1, the above described second feature of the present invention as recited in independent claim 3, the above described third feature as described in independent claim 5, the above described fourth feature as described in independent claim 7, and the above described fifth

feature of the present invention as recited in independent claim 10, in combination with the other limitations recited in each of the independent claims.

Therefore, since the references fail to disclose or suggest the above described first feature of the present invention as recited in independent claim 1, the above described second feature of the present invention as recited in independent claim 3, the above described third feature as described in independent claim 5, the above described fourth feature as described in independent claim 7, and the above described fifth feature of the present invention as recited in independent claim 10, in combination with the other limitations recited in each of the independent claims, it is submitted that all of the claims are patentable over the cited references.

In view of the foregoing, Applicant requests that this Petition to Make Special be granted and that the application undergo the accelerated examination procedure set forth in MPEP 708.02 VIII.

Respectfully submitted,

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